IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Robert M. Jones et al.	Art Unit	: 1624
Serial No.	: 10/541,657	Examiner	: Jeffrey H. Murray
Filed	: March 3, 2006	Conf. No.	: 4098
Title	: 1,2,3-TRISUBSTITUTED ARYL AND HETEROARYL DERIVATIVES AS MODULATORS OF METABOLISM AND THE PROPHYLAXIS AND TREATMENT OF DISORDERS RELATED THERETO SUCH AS DIABETES AND HYPERGLYCEMIA		

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION REQUESTING REVIEW OF A RESTRICTION REQUIREMENT

The applicants hereby petition the Director under 37 C.F.R. §§ 1.144 and 1.181 for further review of the requirement for restriction made in the above-captioned application.

I. Statement of Facts

The above-captioned application was filed under 35 U.S.C. § 371 on March 3, 2006 as the U.S. National Phase of International Application PCT/US2004/001267 which was filed on January 13, 2004 and which claimed priority to U.S. Provisional Application 60/440,394, which was filed on January 13, 2003. Claims 1-100 were pending in the International Phase. The claims were preliminarily amended upon entry to the National Phase, with claims 86 and 93-99 being cancelled.

In an Office Action mailed on July 3, 2008, the Examiner required restriction under 35 U.S.C. § 121 among eighteen groups, alleging that the claims lacked unity of invention.[1] Applicants elected Group V with traverse in a response filed on December 19, 2008.

---

[1] The Examiner characterized the Groups follows:

Group I. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 6-membered ring; V is alkyl or absent; W is O; and Ar_1 is an optionally fused phenyl ring, according to Claims 1-78.

Group II. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 6-membered ring; V is alkyl or absent; W is O; and Ar_1 is a pyrazole ring, according to Claims 1-78.

Following the issuance of an Office Action, on June 9, 2009, Applicants filed a petition requesting review of the restriction requirement. Applicants' petition was granted-in-part. Petition Decision dated December 4, 2009 at p. 8. The Director found that the original claims lacked unity of invention because "the prior art anticipated at least claim 1. Therefore, claim 1 as originally presented lacked unity of invention." Petition Decision dated December 4, 2009 at p. 5. However, the Director also acknowledged that the claims had been amended and that

---

Group III. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 5-membered ring; V is alkyl or absent; W is O; and Ar_1 is an optionally fused phenyl ring, according to Claims 1-78.

Group IV. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 5-membered ring; V is alkyl or absent; W is O; and Ar_1 is a pyrazole ring, according to Claims 1-78.

Group V. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 6-membered ring; V is alkyl or absent; W is NH; and Ar_1 is an optionally fused phenyl ring, according to Claims 1-78.

Group VI. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 6-membered ring; V is alkyl or absent; W is NH; and Ar_1 is a pyrazole ring, according to Claims 1-78.

Group VII. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 5-membered ring; V is alkyl or absent; W is NH; and Ar_1 is an optionally fused phenyl ring, according to Claims 1-78.

Group VIII. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 5-membered ring; V is alkyl or absent; W is NH; and Ar_1 is a pyrazole ring, according to Claims 1-78.

Group IX. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 6-membered ring; V is alkyl or absent; W is absent; and Ar_1 is an optionally fused phenyl ring, according to Claims 1-78.

Group X. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 6-membered ring; V is alkyl or absent; W is absent; and Ar_1 is a pyrazole ring, according to Claims 1-78.

Group XI. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 5-membered ring; V is alkyl or absent; W is absent; and Ar_1 is an optionally fused phenyl ring, according to Claims 1-78.

Group XII. The compound or composition of the formula Ia, where X and Y are N; A, B, and D form a 5-membered ring; V is alkyl or absent; W is absent; and Ar_1 is a pyrazole ring, according to Claims 1-78.

Group XIII. The compound or composition of the formula Ia, not previously described in any of the above groups, according to claims 1-78.

Group XIV. A method for prophylaxis or treatment of a metabolic disorder by administering a compound according to one ofthe above groups, according to Claims 79-81.

Group XV. A method for controlling or decreasing weight gain, according to Claim 82.

Group XVI. A method of modulating a RUP3 receptor, according to claim 83.

Group XVII. A method of modulating a RUP3 receptor, according to claim 84, 85, 87- 92.

Group XVIII. A method of producing a pharmaceutical composition, according to claim 100

Office Action dated July 3, 2008, p. 2-4.

Applicants alleged that the combination of structural features represented by Applicants' amended claims had unity of invention. The Director noted that "[t]o the extent that the previously applied prior art no longer anticipates certain of the claims applicant is correct. However, whether or not the amended claims have unity of invention has not yet been determined." *Id.* The Director instructed the Examiner to "evaluate the amended claims to determine if they have unity of invention" and "to consider whether or not the method claims currently pending have unity of invention with the claimed compounds." *Id.* at p. 8.

In an Office Action dated December 17, 2009, the Examiner stated that he "still considers the claims as presented in the amendment filed on June 9, 2009 to lack unity of invention," yet did not provide any reasoning whatsoever to support this conclusion. Office Action dated December 17, 2009 at p. 2. The Office Action also included no discussion of unity of invention among the compound and method claims despite the Director's instruction to reconsider this issue.

In the most recent Office Action, which was dated May 13, 2010, the claims 1-3, 12-14, 16-61, 73, 74 and 78 were rejected only under the enablement requirement of 35 U.S.C. 112, first paragraph. No prior art rejections were made. Yet the Examiner continued to maintain the restriction requirement made as to the originally presented claims. The Examiner provided the following reasons to justify the maintaining the restriction requirement:

> Groups I-XIII are directed to structurally dissimilar compounds such that the variable core created by varying the definitions of the Formula do not belong to a recognized class of chemical compounds in the art, and references that exist in anticipating one invention would not render obvious the others. For example, a 5-methyl-N-phenyl-6-(pyrrolidin-1-yl)pyrimidin-4-amine is different from a N-(2-cyclohexyl-5-(pyridin-4-yl)-6-(1,3,6-triazocan-1-yl)pyrimidin-4-yl)pyrimido[4,5-d]pyrimidin-4-amine. Thus, as before, separate searches in the literature would be required. The amending of the claims and removal of a few terms has not created unity of invention. Here, each group's compounds are made and used independently of each other and could support separate patents. The compounds differ significantly in chemical structures. One skilled in the art would not consider such diverse structures as functional equivalents of each other. The mere fact that there is a single similarity is not in itself a significant reason to render the whole embodiment obvious. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show

them to be obvious variants. Therefore the feature linking the claims does not constitute a special technical feature as defined by PCT Rule 13.2 as it does not define a contribution over the art.

Applicants have also argued that no mention was made of the lack of unity of invention specifically between the compounds and the methods of use. The 37 C.F.R. 1.457(b) states:

> A national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are ***drawn only to one*** of the following combinations of categories: (emphasis added)
>
> (1) manufacture of said product; or
>
> (2) A product and process of use of said product; or
>
> (3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or
>
> (4) A process and an apparatus or means specifically designed for carrying out the said process; or
>
> (5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process

It is clear that the applicants have more than one of these categories present. Applicants have in their application, the combination of various products, methods of producing a pharmaceutical composition and ***multiple*** processes of use of said product (i.e. treatment of a metabolic disorder, modulating RUP3, controlling or decreasing weight gain, etc.) Accordingly, Groups I - XVII are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

Office Action dated May 13, 2010 at pp. 2-4.

Applicants are filing a response to the Office Action of May 13, 2010 herewith.

II. Points to be Reviewed

The Director is respectfully requested to review the following questions:

1. Whether the Examiner properly found that the presently pending amended claims lacked unity of invention when the compounds encompassed by claim 1 share a combination of structural features that is not anticipated or rendered obvious by any prior art of record, where the novel compounds of claim 1 are a shared feature of claims the compound claims as well as the method claims which all depend from claim 1.

2. Whether each one of the withdrawn claims was properly withdrawn on the basis of lack of unity of invention.
3. To the extent that the restriction requirement is found to be improper, whether the Office Action dated May 13, 2010 was complete.

III. The Action Requested

1. If the Director agrees with Applicants that the Examiner has failed to show that the claims lack unity of invention, the Director is respectfully requested to require that the restriction requirement be withdrawn.
2. If the Director finds that any of the withdrawn claims was improperly withdrawn from consideration, the Director is respectfully requested to require that any such improperly withdrawn claims be rejoined.
3. If the Director finds that the Examiner failed to show that the presently pending claims lacked unity of invention, or that any of the withdrawn claims should not have been withdrawn from consideration, and the Office Action dated May 13, 2010 was therefore incomplete, Applicants request that the finality of the Office Action dated May 13, 2010 be vacated, and the application be forwarded to the Examiner for action on the improperly withdrawn claims.

IV. Arguments

Applicants are filing this petition to request further review of the restriction requirement which was maintained by the Examiner in the Office Action dated May 13, 2010.

In a previous Petition Decision, the Director instructed the Examiner to reconsider the restriction requirement as to the amended claims that are currently pending. Petition Decision dated December 4, 2009 at p. 8. However, despite the amendments made to the claims, the Examiner has made no modification to the restriction requirement. Despite the fact that the references originally applied against the claims were inapplicable to the claims as amended herein, the only the reasoning provided in support of the original restriction requirement has been

provided to support of maintaining restriction requirement. Office Action dated May 13, 2010 at pp. 2-4.

The Examiner has withdrawn claims 4, 5, 62-66, 79-85, 87-92 and 100 from consideration, and these claims have not been examined on the merits.

The claims are now under final rejection with one outstanding rejection made under 35 U.S.C. 112, first paragraph. Applicants must request review of the restriction requirement before appeal. See 37 C.F.R. § 1.144.

A. Applicants are Entitled to Petition to Request Reconsideration of the Restriction Requirement

An applicant may petition from a final requirement for restriction if reconsideration of the requirement was requested. 37 C.F.R. § 1.144. Applicants originally requested reconsideration of the restriction requirement in their response filed December 19, 2008, and in subsequently filed response on March 17, 2010. This petition is being filed before appeal. Applicants are therefore entitled to petition to request reconsideration of the restriction requirement.

B. The Applicable Legal Standard for Unity of Invention

"Unity of invention (not restriction) practice is applicable in ... national stage applications submitted under 35 U.S.C. 371." MPEP 1893.03(d). Unity of invention must be determined under the provisions of the P.C.T. in a national stage application filed under 35 U.S.C. § 371. *Caterpillar Tractor Co. v. Com'r Pat. & Trademarks*, 650 F.Supp. 218, 220 (E.D. Va. 1986). Therefore the legal standards applicable to making a restriction requirement in an application filed under 35 U.S.C. § 371 are those set forth for determining unity of invention under the P.C.T. as given in the P.C.T. itself and the P.C.T. rules (specifically Rule 13).

The standard for unity of invention under the P.C.T. as set forth in P.C.T. Rule 13, states:

> the requirement of unity of invention ... shall be fulfilled ... when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

P.C.T. Rule 13.2. This standard is also codified in 37 C.F.R. § 1.475(a). Unity of invention is satisfied when there is a special technical feature linking the claims. The presence of a special technical feature linking the claims thus defines the unity of invention standard.

While the combination of features defining a "special technical feature" under the P.C.T. must define a contribution over the prior art, the prior art which is to be considered for the purpose of determining unity of invention must have been published prior to the international filing date of the application. Unity of invention is determined under the P.C.T. and the P.C.T. rules, specifically Rule 13. *See Caterpillar Tractor Co.*, 650 F.Supp. at 220.

Authoritative guidelines for determining whether there is unity of invention in specific situations are provided in the Annex B to the Administrative Instructions under the P.C.T. (the "Administrative Instructions") and also in Chapter 10 of the P.C.T. International Search and Preliminary Examination Guidelines (the "Preliminary Examination Guidelines").

Particular standards set forth in these guidelines that are relevant to unity of invention in the present application are discussed in greater detail below.

First, where there is unity of invention within and among independent claims, there is also unity of invention among dependent claims. The Administrative Instructions explain that unity of invention should be considered first in relation to the independent claims. Then, "[i]f the independent claims avoid the prior art and satisfy the requirement of unity of invention, no problem of lack of unity arises in respect of any claims that depend on the independent claims" Administrative Instructions under the P.C.T. Annex B, para. (c)(i).

Second, there is unity of invention as between claims to a product, and claims to methods of making and using the product. The Administrative Instructions explain that the standard for unity of invention under Rule 13.2 should be construed as permitting "in addition to an independent claim for a given product, an independent claim for a process specially adapted for the manufacture of the said product, and an independent claim for a use of the said product." Administrative Instructions under the P.C.T. Annex B, para. (c)(i).

Third, the Administrative Instructions establish that when a series of chemical compounds is defined in a claim using so-called "Markush practice" enumerating alternative

elements, "[t]he fact that the alternatives of a Markush grouping can be differently classified shall not, taken alone, be considered to be justification for a finding of a lack of unity of invention." Administrative Instructions under the P.C.T. Annex B, para. (f)(iv). Unity of invention is satisfied when a significant structural element is shared by all of the alternatives. The significant structural element may be a single component or a combination of individual structural elements linked together. Administrative Instructions under the P.C.T. Annex B, para. (f).

C. The Examiner has Failed Properly to Reconsider the Issue of Unity of Invention as Instructed by the Director

Instead of reconsidering the restriction requirement with respect to the amended claims on file as the Director instructed, the Examiner explains that the same reasons that were provided for finding that the originally filed claims lacked unity of invention justify finding that the presently amended claims lack unity of invention. Office Action dated May 13, 2010 at p. 2. However, the Director previously determined that the original claims lacked unity of invention because "the prior art anticipated at least claim 1." Petition Decision dated December 4, 2009 at p. 5. Furthermore, in response to Applicant's argument that the claims as amended have unity of invention, the Director noted that "[t]o the extent that the previously applied prior art no longer anticipates certain of the claims applicant is correct." *Id.* The Examiner was instructed to evaluate whether the claims *as amended* had unity of invention. *Id.* at p. 8.

The Examiner maintains that the reasons given for finding that the *original claims* lacked unity of invention justifies maintaining the restriction requirement as to the *amended claims*. Office Action dated May 13, 2010 at p. 2. The Examiner does not contend, however, that the amendment that has been made to the claims fails to overcome the anticipation rejection, and neither has the Examiner cited any prior art that anticipates the presently pending claims. The Examiner therefore does not appear to dispute that the particular combination of chemical structural features defined in claim 1 represents a contribution over the art. Applicant therefore believes that the Examiner's position that the restriction requirement is "still proper" is

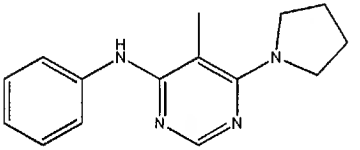
inconsistent with the Director's findings as set forth in the Petition Decision dated December 4, 2009.

Applicant also submits that the reasons given to justify maintaining the restriction requirement suggest that, to the extent the Examiner has reconsidered the restriction requirement at all, the reconsideration has been tainted by factual errors as well as incorrect legal analysis.

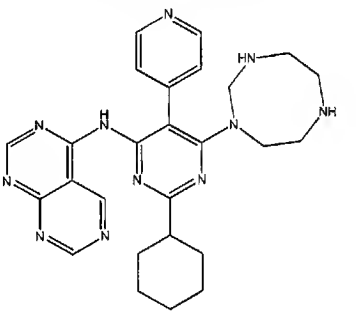
The Examiner justifies maintaining the restriction requirement by arguing that the groups defined in the restriction requirement (made after finding that the *originally filed claims* lacked unity of invention) are "directed to structurally dissimilar compounds" that are not obvious variants of each other. Office Action dated May 13, 2010 at p. 2. The Examiner's analysis in terms of whether the groups of inventions identified in the original restriction requirement are different from each other, whether references anticipating one group would render the others obvious, whether "separate searches in the literature would be required", whether "each group's compounds could be made independently of each other and could support separate patents" and whether they "encompass overlapping subject matter" suggest that the Examiner has applied an analysis more along the lines of that applicable to a restriction requirement made in an application filed under 35 U.S.C. § 111 rather than the standard which should properly be applied to considering unity of invention in an application filed under 35 U.S.C. § 371. As noted above, it is the presence of a special technical feature which defines unity of invention, not whether the claims encompass compounds that are "dissimilar" or non-obvious variants of each other.

The Examiner's failure properly to consider the issue of unity of invention as to the *currently pending claims* is also apparent from his observation that "a 5-methyl-N-phenyl-6-(pyrrolidin-1-yl)pyrimidin-4-amine is different from a N-(2-cyclohexyl-5-(pyridin-4-yl)-6-(1,3,6-triazocan-1-yl)pyrimidin-4-yl)pyrimido[4,5-d]pyrimidin-4-amine." Applicants are unsure of the supposed relevance of this statement because any claim that encompasses more than one compound necessarily encompasses compounds that are "different from each other": this is not the question that should be asked for assessing unity of invention. The question of whether "5-methyl-N-phenyl-6-(pyrrolidin-1-yl)pyrimidin-4-amine" is "different from" "N-(2-cyclohexyl-5-

(pyridin-4-yl)-6-(1,3,6-triazocan-1-yl)pyrimidin-4-yl)pyrimido[4,5-d]pyrimidin-4-amine" is also irrelevant for the further reason that neither 5-methyl-N-phenyl-6-(pyrrolidin-1-yl)pyrimidin-4-amine" (1) or "N-(2-cyclohexyl-5-(pyridin-4-yl)-6-(1,3,6-triazocan-1-yl)pyrimidin-4-yl)pyrimido[4,5-d]pyrimidin-4-amine" (2), whose structures are provided below, is within the scope of the present claims. The first compound lacks a carbon-containing substituent corresponding to R_2 in the claims, whereas the second compound includes a 1,3,6-triazocan-1-yl ring which is not (and never was) within the scope of the definitions of ring N-A-B-D.



(1)



(2)

Applicants believe that a further error is apparent in the Examiner's discussion of 37 C.F.R. § 1.457(b), and his apparent understanding that this regulation limits unity of invention to when the claims are "drawn only to one" of the categories listed in subparagraphs (1)-(5) of the rule.

It is the presence of a special technical feature linking the claims, and not 37 C.F.R. 1/475(b), which defines the unity of invention standard. *See* 37 C.F.R. § 1.475(a) ("the requirement of unity of invention *shall be fulfilled ... when there is a technical relationship* among those inventions *involving one or more of the same or corresponding special technical features.*")

Although 37 C.F.R. § 1.475(b) states that "a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the ... combinations of categories" defined in subparagraphs (1)-(5), this

rule only serves to represent examples of situations where the unity of invention requirement "will be considered" to be met. The regulation does *not* state, as the Examiner appears to assume, as it would need to do for the Examiner's argument to have any validity, that unity of invention is *only* satisfied in the situations presented in subparagraphs (1)-(5) of 37 C.F.R. § 1.457(b). It is the requirement for a special technical feature which defines for unity of invention, not the situations considered in 37 C.F.R. § 1.457(b). The rule quoted by the Examiner in 37 C.F.R. § 1.457(b) merely sets forth circumstances where the requirement for a special technical feature is considered necessarily to have been met.

Applicants note, even under the Examiner's erroneous interpretation of 37 C.F.R. § 1.457(b), that the Examiner had no justification for withdrawing *all* of the method claims. The Examiner's complaint that there are multiple product claims does not explain why the product claims should not have been found to share unity *with at least one* of the claims directed to a method of using the very same product.

Based on the foregoing, Applicants respectfully submit that the Examiner has failed properly to reconsider the question of whether the amended claims have unity of invention. If the Examiner has truly reconsidered whether the *amended* claims lack unity of invention, as instructed by the Director, the Examiner appears to have made numerous errors in the analysis in reaching to the conclusion that unity is lacking and that withdrawing all of claims 4, 5, 62-66, 79-85, 87-92 and 100 is justified.

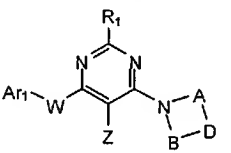
For the reasons set forth more fully below, Applicants believe that the currently pending claims have unity of invention. Furthermore, the Examiner was not justified in his finding that any of claims 4, 5, 62-66, 79-85, 87-92 and 100 lack unity with the elected group and claims that have been examined.

D. The Claims As Amended Have Unity of Invention Because the Combination of Structural Features Defined by Formula (Ia) in Claim 1 Constitute a Special Technical Feature Linking the Claims

The obvious point not properly taken into account by the Examiner is that the compounds of Formula (Ia) in claim 1 constitute a special technical feature linking all of the presently pending the claims. The Examiner has not made any prior art rejection of claim 1, and the

Examiner therefore that the combination of structural features defining Formula (Ia) in claim 1 defines a contribution over the art. A finding of the patentability of the compounds of Formula (Ia) of claim 1 would assure the patentability of the remaining compound claims (which depend from claim 1). The patentability of the method claims over the prior art would also follow from the patentability of the compounds of Formula (Ia).

The compounds of Formula (Ia), defined in claim 1, share substantial structural similarity with the common features being sufficient to constitute a "significant structural element" in common among the claimed compounds. Incorporating the definitions of X, Y, (which are both nitrogen) and V (which is absent, i.e. Ar_1 is directly connected to W) from the claims as amended in the accompanying amendment, the compounds of Formula Ia have the following structure:



(Ia)

wherein:

- A and B are alkylene groups of up to 3 carbon atoms which are optionally substituted with 1 to 4 methyl groups;
- D is CR_2R_3 or $N\text{-}R_2$; in which R_2 is a carbon-containing substituent;
- W is NR_4 or O (where R_4 is H or alkyl); and
- R_1 and Z are selected from a limited number of substituent options.

Based on the definitions in claim 1, the compounds of Formula (Ia) have at least the following combination of features in common:

- A pyrimidine core ring substituted at positions 4, 5, and 6 (numbering based on the pyrimdine nitrogen atoms as positions 1 and 3).
- An aromatic ring by a one atom (two bond) heteroatom linking group from the second row of the periodic table (O or N) at position 4. Since carbon and nitrogen are neighboring elements in the periodic table, the $-NR_4-$ and –O– linking groups have

the same number and configuration of valence electrons, making $-NR_4-$ similar chemically and structurally to –O- (i.e. $-NR_4-$ is isosteric with –O–).

- A substituent (Z) at position 5.
- A cyclic amine linked via nitrogen as a substituent at position 6. The ring is composed of only one or two nitrogen atoms, the remainder being carbon atoms. With respect to the group D, which is $N\text{-}R_2$ or $CR_3\text{-}R_2$, the nitrogen and carbon atoms of $N\text{-}R_2$ or $CR_3\text{-}R_2$ respectively have the same number and configuration of valence electron groups making these groups also similar chemically and structurally (i.e. also isosteric).
- In the ring defined by N-A-D-B, a substituent (R_2) is present on the second nitrogen atom of the ring (if present), or otherwise is present on a carbon atom.

Since the significant structural element required to constitute a "special technical feature" may be a combination of individual structural elements linked together, the combination of common structural elements present in the compounds of Formula (Ia) qualifies as a special technical feature. See Administrative Instructions under the P.C.T. Annex B, para. (f).

It should be noted that in addition to having a common structural features, the compounds of claim 1 also share a *common function.* As Applicants have discovered, the compounds of the invention as defined in claim 1 are active as modulators of the RUP-3 receptor. Thus, while the Examiner argues that the person skilled in the art would not recognize that the compounds of the invention are functionally equivalent, Office Action dated May 13, 2010 at p. 2-3, the inventors of the present application have found that the compounds having the common structural features defined in claim 1 are functionally equivalent with respect to their modulation of the RUP-3 receptor.

It appears that the Examiner may take the view that the requirement for a special technical feature can only be met by a common (and invariant) chemical substructure and that the presence of any "differences" is incompatible with the requirements for a special technical feature. The PCT Rules and Administrative Instructions, however, state that it is a common *feature* or combination of *features* that is required to meet the requirement for a special technical

feature. The concept of a structural feature is not, and cannot, be limited to a narrow requirement for a common chemical substructure as the Examiner would require. The requirement for unity of invention applies to all technologies, not just chemistry, a "chemical substructure" test for unity would clearly be inapposite for evaluating unity of invention. Taken to its extreme, the Examiner's approach would only allow a single compound to constitute a special technical feature in a chemical application.

Applicants respectfully submit that the combination of structural features defining the compound of Formula (Ia) links all the claims of the application and the Examiner has not cited any prior art showing the above combination of features. Accordingly, unity of invention should be acknowledged for the currently pending claims.

E. The Examiner Has Not Made Any Showing of Lack of Unity Between Claim 1, Which Avoids the Art, and Withdrawn Claims Which Depend From Claim 1.

In the Application's present posture, the Examiner is apparently requiring restriction between claim 1, which the Examiner does not dispute avoids the art, and claims 4, 5, 62-66, 79-85, 87-92 and 100, all of which depend from claim 1. Applicants note the withdrawn claims should become eligible for rejoinder under the provisions of MPEP 821.04 once the rejection under 35 U.S.C. 112, first paragraph is withdrawn. *See* MPEP 1893.03(d) (noting that MPEP 821.04, relating to rejoinder of non-elected inventions generally applies to national stage applications submitted under 35 U.S.C. § 371. Applicants believe, however, that the presently pending claims currently possess unity of invention, and that all claims should therefore be examined at the present time.

Even if the Director were to agree with the Examiner that the claims lack unity of invention, Applicants have previously noted their dissatisfaction with the arbitrary group definitions set forth in the original restriction requirement. Petition filed June 9, 2009 at pp. 10-14. As Applicants have pointed out previously, the definitions of Group V, and the other withdrawn Groups, provided in the original restriction requirement were artificial genera created by the Examiner instead of being based on the claims. *Id.* at pp. 12-13. For example, the

Examiner's definition of Ar_1 in the definition of Group V as being an "optionally fused phenyl ring" is one that does not occur in claim 1 or any other of the claims.

Since the present application has already undergone extensive examination, and the issues with regard to the patentability of the pending claims have been narrowed to a single rejection under 35 U.S.C. § 112, first paragraph, Applicants consider that redoing the restriction requirement and restarting examination from scratch would be inappropriate at this point in the proceeding. Instead, Applicants request that the Director review whether the withdrawal of each of claims 4, 5, 62-66, 79-85, 87-92 and 100 is justified based on lack of unity of invention and require that any claims which were improperly withdrawn be rejoined. For the reasons given below, Applicants consider that the withdrawal of each of these claims is unjustified by any proper finding of lack of unity. The withdrawal of the claims is forced by the Examiner's arbitrary definitions defining Group V instead of any proper showing the withdrawn claims lack unity of invention with claim 1.

The Administrative Instructions explain that "[i]f the independent claims avoid the prior art and satisfy the requirement of unity of invention, no problem of lack of unity arises in respect of any claims that depend on the independent claims" Administrative Instructions under the P.C.T. Annex B, para. (c)(i). Since claim 1, on the present record, indisputably avoids the prior art, and, as Applicants have argued above, meets the unity of invention standard, there is no problem of lack of unity between claim 1 and claims 4, 5, 62-66, 79-85, 87-92 and 100 for this reason alone.

Furthermore, MPEP 1893.03(d) explains that when making a restriction requirement based on lack of unity of invention "the examiner must ... explain why each group lacks unity with each other group." The Examiner has not provided any satisfactory explanation of why any of claims 4, 5, 62-66, 79-85, 87-92 and 100 lack unity of invention with claim 1.

Focusing first on the withdrawn compound claims, the Examiner has not explained, and Applicants fail to see, how the structural features defining withdrawn compound claims 4, 5 and 62-66 lack unity of invention with those claims that have already been examined.

First, with respect to claim 4, Applicants note that this claim has been withdrawn because there is a substituent on nitrogen, and the Examiner's definition of Group V arbitrarily limited R_4 to hydrogen instead of including the other substituents included in claim 1's definition of R_4. Applicants submit that there is no basis for the Examiner to withdraw claim 4 on the grounds that claim 4 (in which W is NR_4 and R_4 is methyl or ethyl) lacks unity of invention with, say, claim 3 (in which (in which W is NR_4 and R_4 is hydrogen). The only difference between the compounds of claim 4 and those of the elected group is in the peripheral substituent R_4 of the core structure. It is well-recognized that allowing a substituent to vary on a core structure does not offend unity of invention.

Second, with respect to claim 5, the only difference between this claim and the Examiner's definition of the elected Group is that claim 5 is drawn to compounds in which the one atom linking Group is oxygen, whereas the Examiner's definition of the elected Group limits W to NH. Although the atom involved in bonding is a different element (i.e. oxygen versus nitrogen) any skilled chemist would recognize that there is substantial similarity between a nitrogen and oxygen linking group because nitrogen and oxygen are neighboring elements in the periodic table. The oxygen of the –O- linking group has the same number and configuration of valence electrons as an –NH- linking group, and, as a result, is chemically and structurally similar, and is considered an "isostere" of –NH-. Thus, there is no contradiction between nitrogen and oxygen atoms being different elements yet present as alternatives contributing to a "significant structural element" in common among the claimed compounds.

Third, with respect to claims 62-66, these claims appear to have been withdrawn from consideration because are drawn to compounds wherein Ar_1 is heteroaryl, and that the Exminer supposes that they falling outside the Examiner's arbitrary definition of Group V having Ar_1 as being an optionally fused phenyl ring (a definition that is different from any of the options provided for Ar_1 in claim 1). Applicants also believe the Examiner is correct in this interpretation of his own definition of Group V, since several common heterocycles include a fused phenyl ring, for example quinoline and indole. See also the compounds of Examples A4

and A72. It is unclear that claims 62-66 do not read on the Examiner's vague definition of Group V.

Applicants further note that the options provided for Ar_1 in claim 1 are "aryl" and "heteroaryl", and that both "aryl" and "heteroaryl" refer to rings that have the common property of being aromatic rings. Thus, all the options for Ar_1 provided in claim 1, whether aryl or heteroaryl, belong to the art-recognized class of aromatic rings. The Examiner has not explained why unity of invention considerations require or justify imposing restriction between those compounds in which Ar_1 is an aromatic ring that is phenyl and those compounds in which Ar_1 is an aromatic ring that is other than phenyl. Whether phenyl or not, all the options for Ar_1 in claim 1 must belong to the art-recognized category of aromatic rings.

Applicants therefore submit that the withdrawal of none of claims 4, 5, and 62-66 is justified based on lack of unity of invention.

Turning to the withdrawal of the method claims, withdrawn claims 79-85, 87-92 and 100, these claims are drawn to methods of using the compounds of claim 1.[2] Applicants respectfully submit that the withdrawal of these claims is clearly inconsistent with the standards for unity of invention under the P.C.T. Given that the compounds of Formula (Ia) as defined in claim 1 are novel, and represent a contribution over the art, and that the same compounds are a feature of each of the withdrawn method claims, it is clear that the compounds of Formula (Ia) constitute a special technical feature linking the compound claims to the claims that are drawn to methods for using the very same compounds.

The impropriety of dividing the method of use claims 79-85, 87-92 and 100 from the compound claims of claims 1-4, 12-14, 16-66, 73, 74, and 76-78 is also apparent from at least two of the guidelines for the determination of unity of invention provided in the Annex B to the Administrative Instructions under the P.C.T. (the "Administrative Instructions").

First, as noted above, the Administrative Instructions explain that "[i]f the independent claims avoid the prior art and satisfy the requirement of unity of invention, no problem of lack of

[2] The Petition Decision dated December 4, 2009 notes that "claim 100 is actually a method of making a pharmaceutical composition comprising the compound having the recited structure." Applicants agree with this characterization: claim 100 is drawn to a method of using the compounds according to claim 1 for making a pharmaceutical composition of the compounds according to claim 1.

unity arises in respect of any claims that depend on the independent claims." Administrative Instructions under the P.C.T. Annex B, para. (c)(i). It is undisputed on the present record that independent claim 1 is novel and avoids the prior art, and no showing has been made the claim lacks unity of invention. Claims 79-85, 87-92 and 100 depend from claim 1.[3] Therefore according to the guidelines provided in the Administrative Instructions, there is clearly no issue of lack of unity of invention between claim 1 and claims 79-85, 87-92 and 100, all of which depend from claim 1.

Second, unity of invention is also apparent because claims 1-78 and claims 79-85, 87-92 and 100 are related as claims to a product, and claims to methods using the product. The Administrative Instructions explain that the standard for unity of invention under Rule 13.2 permits "in addition to an independent claim for a given product ... an independent claim for a use of the said product." Administrative Instructions under the P.C.T. Annex B, para. (c)(i). Although Applicants believe that claims 79-85, 87-92 and 100 are properly considered dependent claims, the guidance provided in the Administrative Instructions signifies recognition of the fact that a novel product is clearly a shared feature between claims directed to the product itself and claims directed to using such a product.

Based on the foregoing, Applicants respectfully submit that the withdrawal of each of claims 4, 5, 62-66, 79-85, 87-92 and 100, all of which depend from claim 1 was improper. Applicants respectfully ask that Director require rejoinder of any of the withdrawn claims found to share unity of invention with the claims that have been examined.

[3] Applicants note that the Petition Decision dated December 4, 2009 states that "method claims 79 and 82-84 are independent claims." As is apparent from the text of claims 79 and 82-84, eacb of these claims is multiply dependent from claims 1, 73 or 74, with claims 73 and 74 each depending from claim 1. Each of claims 79 and 82-84 therefore refers to and requires all the features of claim 1. Such method claims are proper dependent claims. *See Ex. Parte. Porter*, 25 U.S.P.Q.2d 1144, 1147 (Bd. Pat. App. & Int. 1992).

F. If the Director Finds That The Examiner Erred in Finding the Pending Claims Lack Unity of Invention, Or the Examiner Erred in Withdrawing Any of Claims 4, 5, 62-66, 79-85, 87-92 and 100, The Director Should Also Require that the Improperly Withdrawn Claims Be Examined

37 C.F.R. § 1.104 (MPEP 707.07) mandates that "[an] examiner's action will be complete as to all matters." However, the Office Action dated May 13, 2010 failed to examine claims 4, 5, 62-66, 79-85, 87-92 and 100. Therefore, if the Director finds that the Examiner erred in finding the presently pending claims lack unity of invention, or that any of claims 4, 5, 62-66, 79-85, 87-92 and 100 was improperly withdrawn, the Director should require that the improperly withdrawn claims be examined in order to provide Applicants with a complete action on the merits of all the claims that are eligible for examination. The Director should therefore vacate the finality of the Office Action dated May 13, 2010, and remand the application to the Examiner for action on the improperly withdrawn claims.

V. Conclusion

In view of the foregoing, the Applicants ask that the Director find that the claims presently pending satisfy unity of invention and that maintaining the restriction requirement was improper. The Director is respectfully asked to find that the withdrawal of claims 4, 5, 62-66, 79-85, 87-92 and 100 from consideration was unjustified by any finding of lack of unity of invention. The Director is asked to require that the restriction requirement be withdrawn and to require rejoinder of any claims that are found to have been improperly withdrawn. Finally, the Director is asked to require that any claims that are found to have been withdrawn from consideration improperly be examined on the merits.

Please apply any charges or credits to Deposit Account No. 06-1050 referencing Attorney's Docket No. 20750-0007US1 / 034.US5.PCT.

Respectfully submitted,

Date: August 13, 2010

Eifion Phillips, J.D., D.Phil.
Reg. No. 55,538

Fish & Richardson P.C.
P.O. Box 1022
Minneapolis, MN 55440-1022
Telephone: (302) 652-5070
Facsimile: (877) 769-7945

80079937.doc